R10137676

DOCUMENT INFORMATION

Sheet 1 of 1

The following information is required when submitting a document to PDC for issuance.	**Correspondence (CCN) No:** 073285 **Document No:** **Rev:**

Project Information (Check Applicable Box)

☐ Balance of Facilities ☐ HLW Vitrification ☐ Analytical Laboratory ☒ Across all areas

☐ Pretreatment ☐ LAW Vitrification ☐ External Interfaces

Document is applicable to ALARA (as determined by the originator)? ☐ Yes ☒ No

Applicability to ALARA means that the item has the potential to affect doses, contamination levels, or releases to the environment. (See 24590-WTP-GPP-SRAD-002, *Application of ALARA in the Design Process*, sections 4.1 and 4.2 for more information.)

Subject code(s): 4152 (for correspondence only)

ACTION ITEM INFORMATION (for correspondence other than meeting minutes)

Commitments: ☐ Yes ☒ No (if yes, brief description below)

Tracked by RITS

Commitment Owed to: Due Date:

Actionee(s)			

Tracked by PADC

Written Response Required: ☐ Yes ☐ No

Owed to: Due Date:

This correspondence closes action on Correspondence Number

☐ Subcontract Files Copies

☐ PAAA Coordinator MS14-4B

☐ Contains SENSITIVE Information

Additional Departmental Info (to facilitate keyword search)

Internal ☐ DNFSB ☐ ORP ☒ OSR ☒ WDOE ☐ WDOH ☐ Other

Special Instructions for PDC

10/27/03

Processed Data Entry ☐ Copied QA ☐ Scanned ☐ Filed

10/27/03

Concurrence Sheet

CCN: 073285

Required Reviewers

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Deputy Project Manager	A. Beckman	☐		
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Project Controls Manager	D. S. Hardin	☐		
Business Manager	C. E. Rogers	☐		
Acting Contracts Manager	J. M. Armstead	☒		10/22/03
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LAW Area Project Manager	W. Clements	☐		
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Additional Reviewers

Title	Name	Initials	Date

W. R. Spezialetti — *Print/Type Applicable Line Manager's Name* — *Signature* — 10/21/03 *Date*

T. B. Ryan — *Print/Type Originator's Name* — *Signature* — 10/21/03 *Date*

U.S. Department of Energy
Office of River Protection
Mr. R. J. Schepens
Manager
P.O. Box 450, MSIN H6-60
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CCN: 073285

OCT 2 7 2003

Dear Mr. Schepens:

CONTRACT NO. DE-AC27-01RV14136 – INCORPORATION OF PAGE CHANGES PER U.S. DEPARTMENT OF ENERGY APPROVAL OF AUTHORIZATION BASIS AMENDMENT REQUEST 24590-WTP-SE-ENS-03-411, REVISION 0

Reference: CCN 070208, Letter, R. J. Schepens, ORP, to J. P. Henschel, BNI, "Approval of Authorization Basis Amendment Request (ABAR) 24590-WTP-SE-ENS-03-411, Revision 0," dated September 25, 2003.

Attached for information are page changes for the Hanford Tank Waste Treatment and Immobilization Plant *Preliminary Safety Analysis Report to Support Construction Authorization; General Information (PSAR, General Information),* Revision 1a. These page changes implement the U.S. Department of Energy, Safety Regulation Division's (OSR) approval of Authorization Basis Amendment Request 24590-WTP-SE-ENS-03-411, Revision 0, as described in the reference.

The OSR approval of the subject ABAR included one additional action that was required in order to close ORP/OSR-2002-18, Revision 3, Appendix B, section 3.12.3, Procedures, Condition of Acceptance (COA) 3. The required statement was added to PSAR sections 12.3.3.1 and 12.3.3.2.1. This COA can now be closed.

An electronic copy of the PSAR, General Information, Revision 1a, is provided for the OSR's information and use.

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Please contact Mr. Bill Spezialetti at 371-3074 for any questions or comments.

Very truly yours,

J. P. Henschel
Project Director

TR/slr

Attachment: *Preliminary Safety Analysis Report to Support Construction Authorization; General Information,* 24590-WTP-PSAR-ESH-01-002-01, Revision 1a

cc:

Allen, B. T. w/a	WTP	MS4-B1
Armstead, J. M. w/a	WTP	MS14-3B
Barr, R. C. w/a (1 hard copy and 1 electronic copy)	OSR	H6-60
Beranek, F. w/o	WTP	MS4-A1
Betts, J. P. w/o	WTP	MS14-3C
DOE Correspondence Control w/a	ORP	H6-60
Duke, J. w/a	WTP	MS4-B1
Ensign, K. R. w/o	ORP	H6-60
Eschenberg, J. w/a	ORP	H6-60
Garrett, R. L. w/a	WTP	MS4-B1
Gibson, K. D. w/o	WTP	MS4-B1
Hamel, W. F. w/o	ORP	H6-60
Hanson, A. J. w/o	ORP	H6-60
Henschel, J. P. w/o	WTP	MS14-3C
Klein, D. A. w/o	WTP	MS4-A1
Lesko, K. F. w/a	WTP	MS12-2B
PDC w/a	WTP	MS11-B
Ryan, T. B. w/a	WTP	MS4-B1
Short, J. J. w/o	ORP	H6-60
Spezialetti, W. R. w/o	WTP	MS6-P1
Taylor, W. J. w/a	ORP	H6-60
Tosetti, R. J. w/o	WTP	MS4-A2

Attachment to
CCN 073285

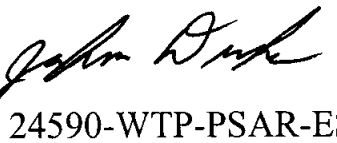
Preliminary Safety Analysis Report to Support Construction Authorization; General Information
24590-WTP-PSAR-ESH-01-002-01, Revision 1a

Document title: **Preliminary Safety Analysis Report to Support Construction Authorization; General Information**

Contract number: DE-AC27-01RV14136

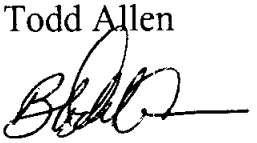
Department: Environmental and Nuclear Safety

Author(s): John Duke

Principal author signature: 

Document number: 24590-WTP-PSAR-ESH-01-002-01, Rev 1a

Checked by: Todd Allen

Checker signature: 

Date of issue: 15 October 2003

Issue status: Approved

Approved by: Fred Beranek

Approver's position: E&NS Manager

Approver signature: 

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History Sheet

Rev	Date	Reason for revision	Revised by
0	17 September 2002	Approved per OSR Safety Evaluation Report (ORP/OSR-2002-18, Rev 0, transmitted by CCN 040123, 21 August 2002)	L Dougherty
0a	10 April 2003	Incorporates Executive Summary and Chapter 6 as approved per OSR Safety Evaluation Report (ORP/OSR-2002-18, Rev 3), transmitted by DOE Letter 03-OSR-0109 (CCN 054381), 17 March 2003	L Dougherty
0b	18 April 2003	Incorporates 24590-WTP-ABCN-ESH-02-033 as approved by DOE Letter 03-OSR-0145 (CCN 054986)	L Dougherty
0c	13 June 2003	Incorporates 24590-WTP-ABCN-ESH-02-001, Rev. 0, as approved by DOE Letter 03-OSR-0178 (CCN 059880)	L Dougherty
0d	25 June 2003	Incorporates 24590-WTP-ABAR-ENS-02-005, Rev. 1, as conditionally approved by DOE Letter 03-OSR-0223 (CCN 062343)	L Dougherty
1	30 September 2003	Incorporates 24590-WTP-SE-ENS-03-092, 2003 Annual Update to the PSAR to Support Construction Authorization, General Information	L Dougherty
1a	15 October 2003	Incorporates 24590-WTP-SE-ENS-03-411, as approved by DOE Letter 03-OSR-0344 (CCN 070208)	John Duke

Revision Status

Document Part	Title	Revision	Pages w/Tracked Revisions
Front Matter	N/A	1a	N/A
Executive Summary	N/A	1	Note
1.0	Site Characteristics	1	Note
2.0	Facility Description	1	Note
3.0	Hazard and Accident Analyses	1	Note
4.0	Important to Safety Structures, Systems, and Components	1	Note
5.0	Derivation of Technical Safety Requirements	1	Note
6.0	Criticality Safety Program	1	Note
7.0	Radiation Protection	1	Note
8.0	Hazardous Material Protection	1	Note
9.0	Waste Management	1	Note
10.0	Initial Testing, In-Service Surveillance, and Maintenance	1	Note
11.0	Operational Safety	1	Note
12.0	Procedures and Training	1a	12-2 through 12-8, 12-14, and 12-15
13.0	Human Factors	1	Note
14.0	Quality Assurance	1	Note
15.0	Emergency Preparedness	1	Note
16.0	Deactivation and Decommissioning	1	Note
17.0	Management, Organization, and Institutional Safety Provisions	1	Note
18.0	Fire Protection	1	Note
Note: Rev 1 is the annual update. Pages with track changes are not noted in this table.			

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4 Important to Safety Structures, Systems, and Components 4-i
5 Derivation of Technical Safety Requirements 5-i
6 Criticality Safety Program 6-i
7 Radiation Protection 7-i
8 Hazardous Material Protection 8-i
9 Waste Management 9-i
10 Initial Testing, In-Service Surveillance, and Maintenance 10-i
11 Operational Safety 11-i
12 Procedures and Training 12-i
13 Human Factors 13-i
14 Quality Assurance 14-i
15 Emergency Preparedness 15-i
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12 Procedures and Training

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12 Procedures and Training

12.1 Introduction

Structured processes for developing, maintaining, and delivering procedures and training have been implemented for the design and construction phase of the project and similar processes will be implemented as the project moves to commissioning and operations. These processes are documented in approved project administrative procedures. Work is planned and performed in accordance with established controls. This ensures repeatable, predictable operation that complies with regulatory requirements and implements safe work practices. The rigorous approach to procedure development, the systematic approach to training, and the emphasis on following procedures when performing work, demonstrates the project's commitment to working in accordance to established controls. During facility operations, these processes will ensure that the safety hazard and accident analyses summarized in Chapters 3.0 of the Final Safety Analysis Report (FSAR) form the basis of the technical content of operating procedures and training for normal, off-normal, and emergency conditions. These processes will also ensure specific procedures and training, described in other chapters of this document, are systematically developed and maintained based on risk and complexity. Other chapters of the FSAR that will contain specific requirements for training or procedures include:

- Criticality Safety (Chapter 6.0)
- Radiation Protection (Chapter 7.0)
- Hazardous Material Protection (Chapter 8.0)
- Waste Management (Chapter 9.0)
- Initial Testing, Operational Safety, In-service Surveillance, and Maintenance (Chapter 10.0)
- Conduct of Operations (Chapter 11.0)
- Quality Assurance (Chapter 14.0)
- Emergency Preparedness (Chapter 15.0)
- Management Organization, and Institutional Safety Provisions (Chapter 17.0)
- Fire Safety Program (Chapter 18.0)

12.2 Requirements

The requirements that form the basis for the facility procedures and training programs are found in:

Safety Requirements Document Volume II (SRD), 24590-WTP-SRD-ESH-01-001-02

Section 4.0	Engineering and Design
Section 4.0-4.2	Safety Criterion
Section 7.2	Training and Procedures
Section 7.2-1 - 7.2-3	Safety Criterion
Section 7.3	Quality Assurance
Section 7.3-1	Safety Criterion

Integrated Safety Management Plan (ISMP): 24590-WTP-ISMP-ESH-01-001

ISMP Section	WTP Project Integrated Safety Management Element	WTP Project Radiological, Nuclear, and Process Integrated Safety Management Coverage PSAR Vol. I Chapter 12
1.5	Training and Qualification	Section 12.4, "Training Program"
1.5	Procedures	Section 12.3, "Procedures Program"
1.5	Development of Operator Training Program	Section 12.4, "Training Program"
1.5	Mechanical Integrity	Chapter 12, "Procedures and Training"

Other

Quality Assurance Manual (QAM), 24590-WTP-QAM-QA-01-001

Policy Q-02.2	Personnel Training and Qualification
Policy Q-05.1	Instructions, Procedures, and Drawings

12.3 Procedures Program

12.3.1 General Information

The Authorization Basis (AB) for the project (included in the requirements documents block on Figure 12-1) is established in cooperation with DOE, and provides the safety, quality, and management control requirements for radiological, nuclear and process safety during design, construction, commissioning, and deactivation of the WTP. Project procedures specify a process to evaluate procedures and procedure changes against the AB for determination of compliance with the AB requirements. At a minimum, management associated with the relevant safety disciplines concurs with new procedures and changes to existing procedures that affect AB requirements.

The WTP as a project is committed to meeting requirements and standards for protecting the safety and health of project workers, the public and the environment and for ensuring that work is planned, performed, and documented. Implementation of these expectations is achieved through a procedure management system that encompasses the development, review, approval, distribution, use, and revision of procedures. Project procedures are prepared to provide explicit instructions for accomplishing work and to support management control functions and technical work activities. Administrative procedures are used to implement management controls functions and assist in ensuring that work is performed systematically and correctly. Administrative and Technical Procedures are prepared during the appropriate phases of the project to support activities such as:

- Configuration Management
- Design
- Construction
- Commissioning (e.g., testing, operations, maintenance, procedures, training, periodic surveillance)
- Emergency Management

- Fire Protection
- Training and Qualification
- Work Planning
- Quality Assurance
- Management Assessments
- Safeguards and Security
- Radiation Safety
- Criticality Safety
- Chemical Process Safety
- Environmental Protection
- Incident Reporting and Investigation
- Human Factors
- Deactivation and Decommissioning
- Records Management

Procedure management programs include mechanisms to collect and respond to feedback on procedure improvements. These mechanisms include activities such as user feedback, incident investigations, audits, and assessments.

12.3.1.1 Design and Construction Phase Procedures Program

The WTP project meets its commitment to working in accordance with established management controls during design, and construction phases through implementation of a procedures management system. This system supports safe work planning, maintains compliance with regulatory and quality requirements, encourages employee involvement, and actively seeks out constructive feedback and continuous improvement. The procedures management system implements the elements of Integrated Safety Management System (ISMS) and is an essential part of the (ISMS). The project readiness assessment process determines the procedure set required to support Construction activities. Procedures are developed and issued before the activity governed by the procedure takes place.

Figure 12-1 shows the origin of project requirements and the flowdown of these requirements to implementation. Requirements come from the prime contract for the project. These contractual obligations require the project maintain compliance with applicable federal, DOE, state, and local regulations and requirements for non-radiological worker safety and health; radiological, nuclear, and process safety; quality assurance (QA); and environmental protection.

Procedures and other documents described in the QAM as implementing documents incorporate the regulatory requirements defined in the documents in the upper three levels of Figure 12-1 and provide traceable implementation of these requirements. Procedures are required when a defined task or activity accomplishes work or for activities defined in the QAM or other AB or requirements document.

For construction activities, the basic work planning process is based on the concept that for standard construction tasks, step-by-step work instructions are not required. A combination of technical specifications, field procedures, and drawings are used to perform the work. Individuals involved in the work are trained to the requirements. The work is planned using a construction administrative procedure

addressing construction work packages. When unique or complex tasks are performed, work planning is addressed in a construction administrative procedure addressing special instruction work packages. This procedure provides for using a work package with additional controls, including, where appropriate, step-by-step instructions.

The procedure owner is responsible for ensuring that procedures are reviewed by affected organizations, maintained consistent with the AB and other project requirements, and approved prior to issuance. Reviewer(s) with responsibility and accountability for the work activities covered in the procedure, or who are affected by the procedure activities, concur with the procedure before it is issued. The Project Archives and Document Control (PADC) organization provides a controlled delivery system that allows WTP personnel access to controlled, current versions of issued procedures.

12.3.1.2 Commissioning Phase Procedure Program

Project activities will be conducted in accordance with procedures. The WTP procedures organization, will develop, and control, procedures in conformance with contract requirments. The project QA manual and implementing procedures will control WTP work processes and will implement the elements of ISMS.

Procedure development and control processes will be governed by administrative procedures that define minimum requirements for technical procedure development and use, including processes for the identification of need, preparation, review, approval, change, revision, use, and periodic review of procedures for commissioning activities.

Procedure users will use and comply with approved technical procedures. Processes for controlling procedure use will be defined in the management control procedures for the procedure program and controlled by the Conduct of Operations program. Procedure use requirements will be based on safety and quality considerations, risk to workers and equipment complexity of task and frequency of performance. Procedure use requirements will be implemented via a classification scheme that will define categories of usage that may include characteristics such as "continuous use, step-by-step, in-hand, reference use, etc."

The current version of all applicable procedures will be provided to the worker. It will be the line management's responsibility to ensure controlled copies of procedures and instructions are available and to train workers on identifying and using the current procedure revision. The procedure user will have the responsibility to ensure that the procedure to be used is the current version.

WTP administrative procedures will require that procedure users stop work if the work cannot be accomplished as described in the procedure or if accomplishment of the work would result in an undesirable situation. The procedure user will be required to notify supervision if work cannot be accomplished as described in a procedure.

The following table identifies activities and anticipated procedure needs for those activities for different phases of the project.

Procedure Activities	Design	Construction	Commissioning
Configuration Management	X	X	X
Design	X	X	X
Construction		X	X
Commissioning			X
Periodic Surveillance (TSR)			X
Maintenance		X	X
Emergency Preparedness	X	X	X
Fire Protection	X	X	X
Training and Qualification	X	X	X
Work Planning		X	X
Quality Assurance	X	X	X
Management Assessments	X	X	X
Safeguards and Security	X	X	X

12.3.2 Development of Procedures

12.3.2.1 Design and Construction Phases Procedure Development

At WTP, the processes for developing, issuing, revising and canceling procedures and other administrative documents is governed by administrative procedures that have been reviewed by affected organizations, and approved by responsible management.

The determination of when a procedure is necessary is based on the flow-down of requirements, risk, task complexity, quality, and safety considerations. Guidance on format, content, and presentation of materials is provided by the procedure on procedures.

The WTP document control system is administered by the PADC organization. This system provides a controlled electronic delivery system of approved procedures and lists approved procedures, by title, number, revision, and effective date.

12.3.2.2 Commissioning Phase Procedure Development

SRD, section 7.2-3 requires procedures be developed for anticipated operations, evaluations, tests, and off-normal or emergency situations. The extent of detail in a procedure will depend on the complexity of the task, the experience and training of the users, the frequency of performance, and the significance of the consequences of error. Administrative procedures will delineate the process and requirements for the preparation or revision of both technical and administrative procedures. An existing procedure set is in place for the design and construction phase of the project. Changes and additions to the existing procedure set will be identified before the commissioning phase is entered. Management control procedures needed to commence commissioning will be developed and approved for implementation prior to the start of the commissioning phase. Remaining commissioning procedures (see second bullet

below) will be scheduled for completion before the activity takes place. The procedure set falls into two categories:

- Major management control systems
- System and facility commissioning (including off-normal operations, alarm response and maintenance support activities and control of hazardous processes)

Steps in the technical procedure development process are illustrated in Figure 12-2 and are described in the following subsections.

- Identify the need. Technical procedures will be developed for anticipated operations, transients, evolutions, surveillances, maintenance, and off-normal or emergency situations. The need for a new or revised procedure may be identified under the following circumstances:
  - When modifications in the conduct of an operation are implemented
  - When equipment or systems are modified
  - When a procedure is deemed inadequate during task performance
  - As a result of a periodic review of technical procedures

- Develop the technical basis. During technical draft development, a subject matter expert will gather information that will lead to identifying the sequence of steps that should be performed in a particular process (i.e., the technical basis for the procedure). Typical source documents used in developing the technical basis for a procedure will include:
  - Safety Analysis Report
  - Technical Safety Requirements (TSR)
  - System Descriptions
  - Facility configuration drawings
  - Vendor information
  - Operational lessons learned
  - P&IDs

- Prepare and review the draft. Draft procedures will be prepared consistent with administrative procedure requirements. A writer's guide should be used to ensure the:
  - Format and content of procedures are consistent
  - Procedure steps are written to effectively communicate the required actions
  - Procedure steps and precautions effectively communicate operating, safety, administrative, design, and quality control limits
  - Procedure incorporates human factors that lead to effective procedure use

The need, scope, applicability, and basis of each procedure will be documented either in the procedure itself, or in a history file.

Technical review (verification) will ensure the technical accuracy of a procedure, and compare the procedure against the appropriate source document requirements.

Operations procedures for the WTP will be drafted, reviewed, verified, validated, and approved per the WTP Conduct of Operations Program. Validated procedures will be provided to the testing organization for their use during initial system startup and other testing activities as needed. A set of normal operations procedures, defined in the test program administrative procedures, will be performed during commissioning. The administrative procedure will contain a process for determining which operating procedures will be validated during pre-operational testing. Examples of procedures that may not be fully validated or validated at all during testing include shutdown of the instrument air system (which may need to be left operational after testing) and operations procedures such as fire extinguisher checks (which do not impact system operation). Required changes identified during testing will be incorporated based on information received from the test program. Operations procedures will be revised in accordance with the WTP Conduct of Operations Program (DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter XVI, Section C. Guidelines, Subsection 1, "Procedure Development"; Subsection 3, "Procedure Changes and Revisions"; and Subsection 5, "Procedure Review"). This criterion is also covered in 24590-WTP-GPP-PL-OP-001, *WTP Conduct of Operations*, section 16.0, "Operations Procedures", steps 16.2.2 and 16.2.7.

The approval of the operating and maintenance procedures before their performance will ensure that the procedure is compatible with the equipment or system being maintained, and that it provides sufficient and understandable guidance to the end user. The performance and correction of the procedures before facility operation will ensure the procedure's adequacy for facility operation.

Technical procedure validation will be a review of a procedure generally performed by the end user to ensure its usability and correctness. This review, usually performed at the work location, will validate that the procedure provides sufficient and understandable guidance and direction to the user and that the procedure is compatible with the equipment or system being maintained.

- Approve the procedure. New procedures and, procedure revisions, will be reviewed and approved according to requirements contained in WTP administrative procedures. Document approval will be indicated by a signature to release and use the procedure. WTP administrative and technical procedures will be assigned a unique procedure and revision number. A record copy will be placed into a document control file, and the most recent revision of the procedures will be made available to procedure users.

12.3.3 Maintenance of Procedures

12.3.3.1 Design and Construction Phases Procedure Maintenance

Feedback and continuous improvement is integrated in the procedure management program through a variety of processes. These processes gather information concerning the adequacy of procedures and work processes. Opportunities for improving the definition, planning, and performance of work are identified and developed. Examples of these feedback and improvement processes include:

- Lessons learned
- User feedback
- Management and self assessments

- Independent assessments
- Corrective actions
- Audits

The project procedure complies with the WTP QA Manual and addresses permanent procedure revisions and expedited procedure changes.

12.3.3.2 Commissioning Phase Procedure Maintenance

The safety of WTP facilities and personnel will depend on the availability of procedures that correspond to the current plant configuration. The process for maintaining technical procedures current with plant configuration will be documented in administrative procedures.

Training needs related to procedure revisions will be determined by the line manager responsible for the procedure being revised. This determination will be based upon the significance of the change.

12.3.3.2.1 Procedure Changes

To ensure procedures continue to be technically and administratively accurate and they incorporate appropriate facility design, safety analysis operation, and vendor technical information, needed changes will be controlled by a process that requires a review and approval of the changes. This procedure change process will be used to proceduralize modifications to important-to-safety (ITS) structures, systems and components (SSCs), processes, or requirements; and to correct procedural errors, ambiguities, and human factor deficiencies that could result in personnel error or unsafe job performance.

The level of review and approval for procedure changes will depend on the scope of the recommended change, and the approval process will be addressed in WTP administrative procedures.

The project procedure complies with the WTP QA Manual, and addresses permanent procedure revisions and expedited procedure changes. Under the USQ process, a USQ Determination will be performed on designated procedure changes. Both permanent procedure revisions and expedited procedure changes are included in these requirements.

12.3.3.2.2 Periodic Review of Procedures

WTP administrative procedures will require that procedures be reviewed at periodic intervals to ensure information and instructions are technically accurate and appropriate human-factor considerations have been included. This process will specify that Emergency Plan Implementing Procedures will be reviewed annually

12.4 Training Program

12.4.1 General Information

Personnel training and qualification is viewed by WTP facility management as essential in achieving personnel performance and in protecting workers and the environment. The senior manager during each project phase will have the overall responsibility for maintaining a qualified workforce. Line managers will be responsible for the content and effectiveness of training and qualification processes, and training

management will be designated and assigned responsibility for developing and implementing facility training programs.

A training department has been established to plan, coordinate, and implement the training program. This department takes a graded approach to implementing training, meaning the level of training is commensurate with importance to safety and quality of the results. Written procedures are established for the formal training of personnel, and for ensuring only those individuals who meet their requirements are permitted to perform the organization activities. These training and qualification procedures and the training system described in this section apply to all WTP project personnel and subcontractor employees. Responsibilities of personnel involved in management, review, approval, and implementation of the training program are defined in these training procedures. The WTP training management is assigned responsibility and accountability for the implementation of the training program and for periodic evaluation of its effectiveness.

12.4.1.1 Training During Design Phase

A training program for the design-phase of the project has been developed. The primary objectives of this program are to ensure personnel involved in the project achieve and maintain the capabilities required to perform their assigned tasks safely.

Management hires people who are qualified by education, training, and experience to fill established positions. Functional and line managers are responsible for establishing a training profile for each employee based on applicable job descriptions or task assignments and ensuring employees are capable of performing their assigned work. Training is concentrated primarily in the areas of design evolutions, compliance with regulations and commitments, QA, and other management control processes commensurate with the scope, complexity, and importance of the activity.

Suitable instructional methods are selected, which may include one or a combination of classroom training, computer based training, and reading assignments.

Refresher training is provided to comply with periodic training requirements specified in applicable federal and state regulations, maintain required certifications, or meet management expectations. Training records specified by requirements are maintained in accordance with PADC procedures.

12.4.1.2 Training During Facility Construction

A training and development program for the construction phase of the project has been developed. The primary objectives of this program is to ensure that the personnel involved in the Project achieve and maintain the capabilities required to perform their assigned tasks safely. When knowledge and skills specific to the project or to an assigned task are required, task specific training and assessments are provided both for manual and non-manual workers.

Manual workers are qualified at the time of hiring by training and experience to fill established positions. Project construction management is responsible for development of a training profile for manual worker job classifications. Training for manual workers is concentrated primarily in the areas of industrial safety, fire protection, appropriate Hanford site employee training and QA.

Non-manual workers are qualified at the time of hiring by education, training, and experience to fill established positions. Functional and line managers are responsible for development of a training profile

for each non-manual employee based on applicable job descriptions and task assignments. These non-manual workers are included in the training program described in section 12.4.1.1 above and in construction phase specific training. Training is concentrated primarily in the areas of design evolutions, construction activities, compliance with regulations and commitments, QA, and other management control processes.

Once training needs are identified, suitable instructional methods are selected for training on each subject. Instruction methods include classroom training, computer based training, videos, and reading assignments. Classroom trainers are selected based on knowledge of the subject matter and qualifications for leading the training.

Construction management has assigned personnel to plan, coordinate, and implement an effective training program. Written procedures are established for the formal training of personnel, and for ensuring only those individuals who meet their requirements are permitted to perform construction activities

Refresher training is provided to comply with periodic training requirements specified in applicable federal and state requirements or to maintain certain certifications. In addition, management specifies retraining on certain subjects based on preservation of high standards of safety and quality. Records of the identification of training needs and training performed are maintained in accordance with PADC procedures.

12.4.1.3 Training During Facility Operation

The training and qualification standards and the training system described in this section apply to WTP facility personnel and subcontractor employees performing operations, maintenance, and technical support work at the facility.

The goal of training during the operational phase will be to ensure that personnel engaged in activities affecting safety attain the ability to work safely and are qualified to perform their duties commensurate with the scope, complexity, and importance of the activity being performed.

Line managers, in conjunction with operations and technical support training personnel, will have the primary responsibility for the content of the training programs and will be responsible for providing the resources necessary for their staff to participate in training required for their job function.

Functional and line managers are responsible for establishing individual training profiles for indoctrination, training, and formal qualification that will be tailored to match the employee's role in the organization and for ensuring personnel are capable of performing their assigned work. Exceptions from training will be granted when justified and approved by management.

Training plans for formal qualification programs will describe the initial, continuing, and refresher training requirements for key personnel who perform operations, maintenance, and technical support that are important to safe facility operation. These training plans will also contain minimum education, experience, and medical (if applicable) requirements as determined by line management.

Initial and continuing training will be established for formal qualification to ensure individuals are qualified to perform job requirements, to maintain proficiency, and to ensure safe facility operations. Employees who are part of a formal qualification program are evaluated on their mastery of learning objectives using methods that may include examinations, performance evaluations, questioning, or the

instructors' confidence of mastery. Qualifications for instructional personnel will be specified in the training plan. Personnel who have not received training as part of a required formal qualification program affecting safe operation of the plant can work only under the supervision of qualified personnel.

Initial training will consist of the appropriate combination of required reading, self-study, classroom lectures, computer-based training (CBT), on-the-job training (OJT), and performance evaluations. Employees involved in operating a process will be trained in an overview of the process and in the operating procedures an instructions based on the risk and complexity of the activity. Initial training programs will include, as applicable, basic theory and fundamentals, principles of facility operation and operating characteristics, facility systems, normal, off-normal, and emergency operating procedures. OJT and task qualifications will be completed by actual task performance to the degree practical and when actual task performance cannot be performed. OJT will be performed in the best simulated environment available under the instruction of qualified personnel.

Continuing training will be administered on a two-year cycle and will include an appropriate combination of required reading, self-study, classroom training, CBT, OJT, and performance evaluations. The 2-year cycle will be initiated upon authorization to commence hot commissioning of the respective facility. Training content will be tailored to the position based on the risk and complexity of the activities associated to maintain safe operation of the facility. This may include topics that cover significant changes to facility, SSCs, and significant procedure changes; operating experience feedback; training to correct identified performance problems; emergency response, and selected fundamentals, that emphasize seldom-used knowledge and skills necessary to ensure safety. When modification to the facility is significant enough to impact the training program, personnel will be informed of and/or trained prior to start up of the process or affected part of the process. The training will include emphasis on the specific safety and health hazards, operating limits, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

Training records specified by requirements are maintained in accordance with PADC procedures. During facility operation, these include up-to-date records, which contain the name of the trained employee, the type of training, the date of training, and the means used to verify that the employee understood the training, when necessary based on risk and complexity.

12.4.2 Development of Training Material

12.4.2.1 Development of Training Material During Design Phase

The training department personnel and subject matter experts work together to create training material and recommend the method of instruction. Course content may include procedure reviews, lesson plans, briefing guides, handouts, exercises and exams.

12.4.2.2 Development of Training Material During Facility Construction

The construction organization uses subject matter experts to create course material and recommend the method of instruction. Course content including (as applicable) lesson plans, briefing guides, handouts, exercises and exams is based on course objectives developed by line management and subject matter experts. Trainee mastery is evaluated by various methods, including written tests or demonstration of skills and knowledge presented in the classroom.

12.4.2.3 Development of Training Material During Facility Operations

A systematic approach will be used for the development of formal qualification programs for operations, maintenance, and technical support personnel who ensure safe facility operation. This systematic approach to training includes five general phases, applied as necessary, using a graded approach. They are: analysis, design, development, implementation, and evaluation. Using this systematic approach to training will ensure the following:

- A systematic analysis of formal qualification job positions identifies the tasks/functions and associated procedures necessary to prevent or mitigate consequences of SAR concerns. Learning objectives are derived from the analysis that describes desired performance after training. Training staff and technical experts will develop a list of tasks that require training by using available job information such as safety and hazards analyses procedures, TSRs, and equipment and system operating manuals.
- Learning objectives derived from the analysis - Learning objectives will be defined during the design phase of the systematic approach to training. Action statements that describe the desired post-training performance by using the task list will be developed. Learning objectives will identify the knowledge, skills, and abilities the trainee must demonstrate, the conditions under which required actions will take place, and the standards of performance the trainee will achieve. Learning objectives are sequenced based on their relationship to one another.
- Training is implemented based on learning objectives derived during the design process.
- Trainee mastery of objectives is evaluated during training
- Evaluation and revisions are based on feedback during training, job performance of trainees, and feedback from supervision.

12.4.3 Maintenance of Training

Training will be provided to personnel affected by changes in processes, procedures, or SSC design modifications when determined necessary. This will be determined based on the risk and complexity of the job tasks involved and the significance of the change.

12.4.3.1 Maintenance of Design and Construction Phases Training

Effective training programs are maintained current based on feedback from personnel, line management, the quality program, new regulations, and self-assessments. Training will be modified or developed as appropriate to respond to sources of feedback, changing requirements, or changing policy or procedures.

12.4.3.2 Maintenance of Operational Phase Training

To ensure that training is maintained to reflect current operating practices and procedures, a process to maintain training materials current will track items that may affect the content of WTP facility training programs and materials. This process will be accomplished in conjunction with the configuration management program (section 17.6.3, Configuration Management) and the procedure change process, and will permit the training staff to respond to the need for changes resulting from new or revised regulatory requirements, safety analyses, TSRs, procedure changes, changes in facility equipment configuration, and resolution of audit finding. The content of training materials will be revised using the same administrative controls that are used to develop new training materials.

Periodic systematic program evaluations will be conducted every three years to measure the training system's effectiveness in producing qualified employees. Training program evaluations should identify program strengths and weaknesses, determine if worker performance has improved, assess if program content matches current job needs, and determine if corrective actions are needed to improve program effectiveness.

12.4.4 Modification of Operational Phase Training Material

The need to modify training materials may be identified as part of the periodic review process, as a result of an identified training deficiency, by operational event analysis, or by industry experience analysis. Programs will be developed to ensure needed changes identified from these sources are tracked and implemented.

12.5 References

WTP Project Documents

24590-WTP-ISMP-ESH-01-001-01, *Integrated Safety Management Plan*

24590-WTP-SRD-ESH-01-001-02, *Safety Requirements Document Volume II*

24590-WTP-QAM-QA-01-00001, *Quality Assurance Manual*, Policy Q-02.2, "Personnel Training and Qualification"

Other Documents

HFAC-007. *Principles for Excellence in Procedure Writing.* US Department of Energy, Washington, DC.

Figure 12-1 Document Type Hierarchy

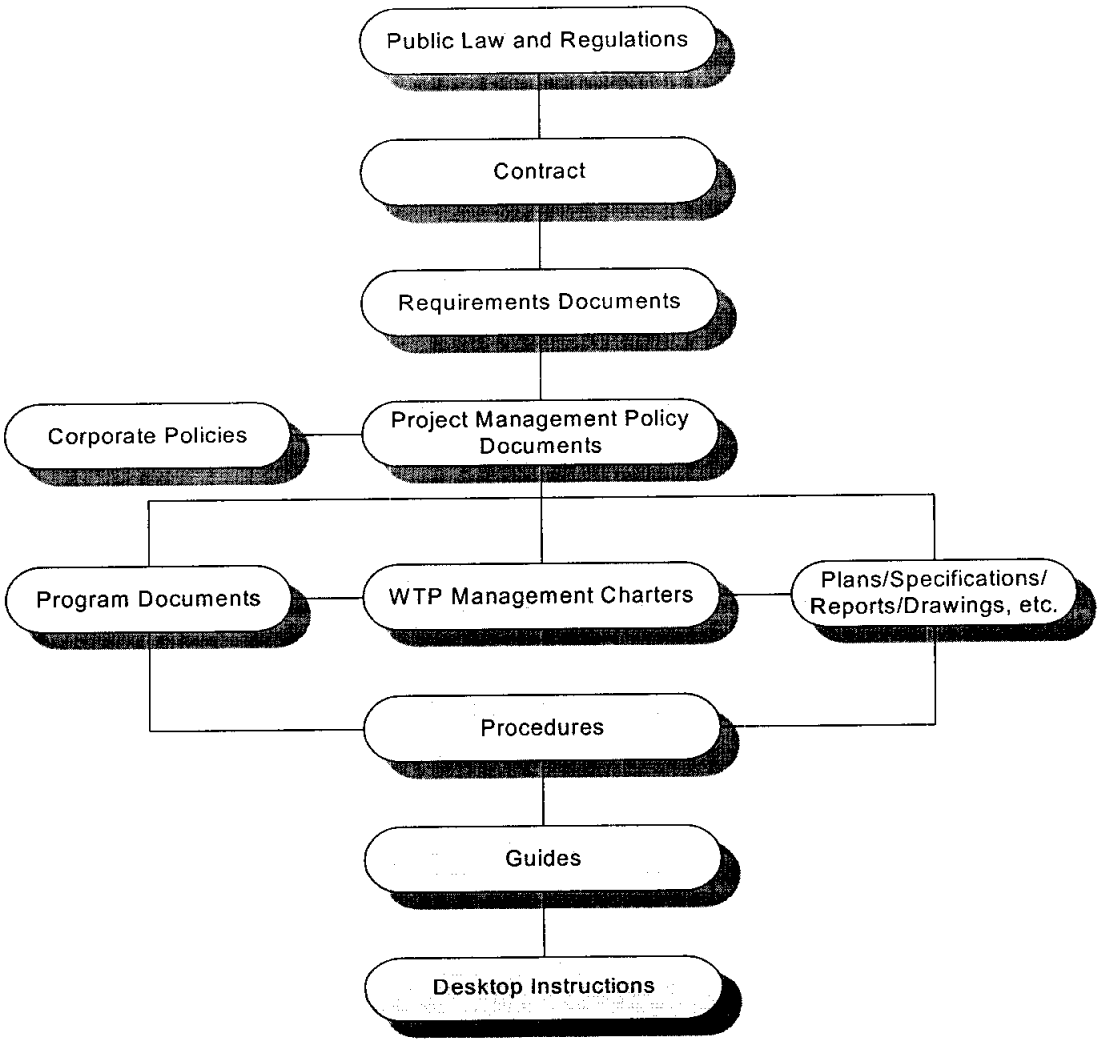

Figure 12-2 Procedure Development Process